L 20227-65
ACCESSION NR: AP5002105

2

Cosmos-7 and Cosmos-15 the geographical distribution of electron density in the Brazilian anomaly at an altitude of approx 300 km was determined. This distribution roughly coincided with electron distribution in the inner-radiation belt measured by Discoverer-31. The existence of electrons with energies exceeding 2 Mev within the inner radiation belt are indirectly indicated. During the flight of Cosmos-4 in April 1962, the counting rate of the Geiger counter showed a fourfold increase over satellite measurements made in August 1960. The rate of increase coincided with the proton-density change within the inner belt during the period of the transition to minimum solar activity (and decreased atmospheric density). Orig. art. has: 6 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: AA, ES

NO REF SOV: 007 OTHER: 010 ATD PRESS: 3162

Card 2/2

ACCESSION NR: AP4037608 S/0056/64/046/005/1901/1903

AUTHORS: Bednyakov, A. A.; Dvoretskiy, V. N.; Savenko, I. A.; Tulinov, A. F.

TITLE: Multiple scattering of protons with energy 75--200 keV in solid substances

SOURCE: Zh. eksper. i teor. fiz., v. 46, no. 5, 1964, 1901-1903

TOPIC TAGS: copper, aluminum, polystyrene, proton scattering, angular distribution, charge exchange

ABSTRACT: The study of multiple scattering of low energy heavy charged particles, which was started by the authors with carbon (ZhETF v. 42, 740, 1962) was continued with substances of higher Z. The angular distributions of protons scattered by thin foils of aluminum and copper were measured using nuclear emulsions mounted perpendicular to the beam axis. The measurement procedure was improved

Card 1/4

ACCESSION NR: AP4037608

somewhat by using an electrostatic analyzer behind the scattering chamber to determine the proton energy before and after penetration of the target. The measurement data were used both in the theoretical analysis of the obtained results and as a means of checking the target thickness. The angular distributions of the multiply scattered protons were obtained for a set of copper foils 190--530 μg/cm^2 thick in the initial energy range E_0 = 193--93 keV and for aluminum foils 52, 82, and 183 μg/cm^2 thick in the range E_0 = 184--75 keV. Measurements were also made with polystyrene targets (46 and 82 μg/cm^2) to obtain more accurate data for carbon at energies less than 100 keV. The results for copper and aluminum were analyzed on the basis of the Bethe theory. The theoretical calculations are found to be in fairly good agreement with the experimental data for practically all proton energies and target thicknesses, even in the multiple scattering region. The agreement is somewhat surprising since no allowance was made for charge exchange, which is consider-

ACCESSION NR: AP4037608

able at low energies. Orig. art. has: 2 figures.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Nuclear Physics Institute, Moscow State University)

SUBMITTED: 27Jul63 DATE ACQ: 09Jun64 ENCL: 01

SUB CODE: NP NR REF SOV: 001 OTHER: 001

Card 3/4

L 58391-65 EEO-2/EWG(j)/FSS-2/EWG(r)/EWT(1)/EWT(m)/FS(v)-3/EEC(k)-2/EPF(n)-2/
EWG(v)/EWG(m)/FCC/EWA(d)/EEC-4/EEC(t)/EWG(a)-2/EWG(c)/EWA(h) Po-4/Pe-5/Pq-4/Pac-4/
ACCESSION NR: AP5011501 Pae-2/Peb/Pi-4/UR/0188/65/000/002/0040/0043
Pu-4 TT/GW 16

AUTHORS: Savenko, I. A.; Pisarenko, N. F.; Shavrin, P. I.; 95
Nesterov, V. Ye. B

TITLE: Monitoring the cosmic radiation level during the time of flight of the space ships Vostok-3, Vostok-4, Vostok-5, and Vostok-6 12

SOURCE: Moscow. Universitet. Vestnik. Seriya 3. Fizika, astronomiya, no. 2, 1965, 40-43 19

TOPIC TAGS: space radiation, radiation shielding, space capsule, astronaut protection/Vostok

ABSTRACT: The space capsules in question were provided with a dosimetric apparatus consisting of a transmitter (gas-discharge counter of nuclear radiation) and a memory circuit, and was connected by telemetry to a scientific coordination center, which received data from various points concerning the solar activity and the radiation level in space. In spite of the occurrence of certain high intensity solar flares and in spite of the artificial radiation belt produced

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L 58391-65

ACCESSION NR: AP5011501

by the thermonuclear explosion in the region of the Johnston Island in the Pacific (2 July 1962), it is concluded on the basis of the accumulated data that the astronauts were not exposed to dangerous radiation during the flights of all these capsules. Original article has: 2 figures

ASSOCIATION: NIIYaF (Nuclear Physics Institute, Moscow State University)

SUBMITTED: 25Feb64 ENCL: 00 SUB CODE: SV, LS

NR REF SOV: 005 OTHER: 000

Card 2/2

L 35617-65 EWT(1)/EWG(v)/EEC-4/EEC(t)/EWA(h)/FCC Po-4/Pe-5/Pq-4/Pae-2/Peb/Pi-4
ACCESSION NR: AP5005441 GW-2 S/0293/65/003/001/0128/0134

AUTHOR: Vernov, S. N.; Savenko, I. A.; Tverskaya, L. V.; Tverskoy, B. A.; Shavrin, P. I.

48
48
B

TITLE: Electron intensity of radiation belts at altitudes of 180-330 km in conjugate regions with negative geomagnetic anomalies

SOURCE: Kosmicheskiye issledovaniya, v. 3, no. 1, 1965, 128-134

TOPIC TAGS: electron intensity, radiation belt, aeronomy, geomagnetism, geomagnetic anomaly, Coulomb scattering, atmospheric radiation, outer radiation belt, conjugate point

ABSTRACT: Data from the second and third Soviet satellite-ships have been used in an investigation of the asymmetry of the electron intensity of the radiation belts at conjugate points in a case when one of them is underground. The recording instruments of these satellites made it possible to determine the planetary distribution of intensity at heights of 180-330 km. The data used were from a scintillation counter recording mostly the bremsstrahlung of electrons. The information was obtained during a period of approximately 24 hours. Comparison of the counter readings at the same point in space, obtained on different flights, indi-

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L 35617-65

ACCESSION NR: AP5005441

3

cates that appreciable changes in electron intensity in the belts occur with time. Intensity was observed in the Northern Hemisphere in a region conjugate with the South Atlantic anomaly and in the Southern Hemisphere in a region conjugate with the Bering anomaly. An estimate is made of the leakage of particles from the belt, and there is a discussion of the limits of applicability of the concept of a mirror point of a particle on the basis of Coulomb scattering. It is shown that the dense layers of the atmosphere can very probably reflect electrons with small pitch angles. In all probability, the asymmetry effect in electron density can be attributed to acceleration of particles at low heights. If the observed counting rate is created by bremsstrahlung of electrons with energies $\leqslant$50—100 kev, the effect can be attributed to the Coulomb diffusion of particles from the outer radiation belt. "The authors wish to thank T. V. Kukarina, L. V. Drozdova and Ye. A. Voronina for assistance in finalizing the results." Orig. art. has: 14 formulas, 2 figures and 2 tables. [08]

ASSOCIATION: none

SUBMITTED: 27Jan64 ENCL: 00 SUB CODE: ES, AA

NO REF SOV: 003 OTHER: 004 ATD PRESS: 3220

Card 2/2

L 27192-65 EWT(d)/EWT(l)/EEC(m)/FSF(h)/FSS-2/FS(v)-3/EEC(k)-2/EWG(s)-2/EWG(v)/
[illegible] EWA(d)/[illegible](t)/EWA(h)/EWA(c) Po-4/Pe-5/Pq-4/Pg-4/Pae-2/
[illegible] Pr-4/P-[illegible] [illegible]/GW/AT
[illegible] AP 005197 [illegible]/65/005/001/0148/0154

AUTHOR: Mel'nikov, V. V.; Savenko, I. A.; Savin, B. I.; Shavrin, P. I.

TITLE: Experience in the use of an electrostatic analyzer on Cosmos-12 12 77

20

B

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 1, 1965, 148-154

TOPIC TAGS: electrostatic analyzer, 10 ionization measurement, 9m ion current, spaceborne ionization measurement, electron detection

ABSTRACT: Cosmos-12 (apogee, 405 km; perigee, 211 km) and Cosmos-15 12 (apogee, 371 km; perigee, 173 km) were equipped with identical electrostatic analyzers for the study of electron and positive ion currents with energies of 1 kev. The analyzer (see Fig. 1 of Enclosure) is basically a spherical capacitor with symmetrical potentials applied to the plates. The charged particles entering into the gap between the plates are deflected by the electric field and strike a Faraday cylinder, which serves as the collector. The angle of deflection of a particle projected along the zero equipotential in the gap was 120°. Additional deflections at the input and output of the gap did not exceed 2.5°. The copper capacitor plates were silverplated to reduce light reflection in the ultraviolet region. The radius of the outer surface of the gap was 66 mm; that of the inner, 54 mm. Conical shields were mounted

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L 27192-65

ACCESSION NR: AP5005197

in front of the input and behind the output of the gap to reduce the effects of stray fields. The passband width of the analyzer was approx 30%; its threshold sensitivity under isotropic conditions was approx 6 x 10^6 part/cm^2·sec·kev. The following conclusions are drawn from measurements made with the analyzer during the flight of Cosmos-12: 1) The intensities of electrons and ions with energies of 1 kev on the night side of the Earth were usually lower than the threshold sensitivity of the analyzer. 2) On two orbits, the analyzer registered higher electron and ion intensities (> 10^8 part/cm^2·sec·kev) over the equatorial regions of the Pacific, due presumably to the effects of a solar flare of magnitude 1 which occurred during the flight. 3) No constant intensity levels exceeding 6 x 10^6 part/cm^2·sec·kev were measured during the daytime sectors of the flight. 4) To the south of New Zealand, occurrences of increased intensity (∿ 10^8 part/cm^2·sec·kev) were registered on the 28th and contiguous orbits. Orig. art. has: 4 figures.

[DW]

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Institut yadernoy fiziki (Moscow State University, Institute of Nuclear Physics)

SUBMITTED: 17Sep64	ENCL: 01	SUB CODE: EC, EM
NO REF SOV: 003	OTHER: 003	ATD PRESS: 3191

Card 2/3

ACCESSION NR: AP5005197

ENCLOSURE: 01

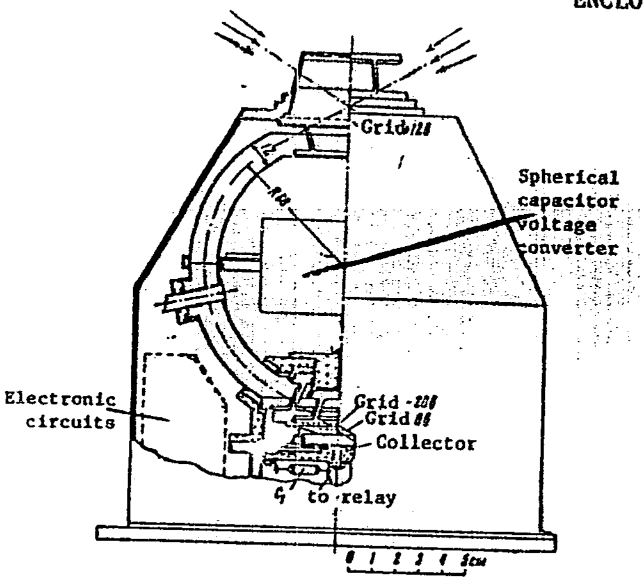

Fig. 1. Electrostatic analyzer

L 53715-65 EEC-4/EWG(v)/EWA(h)/EWT(l)/EEC(t)/EEC(m)/FCC Po-5/Pi-4/Po-4/Pq-4/
Pae-2/Peb IJP(c) GW

ACCESSION NR: AP5014116 UR/0203/65/005/003/0546/0549
550.388.2

45
44
B

AUTHOR: Savenko, I. A.; Savun, O. I.; Shavrin, P. I.; Yakovlev, B. M.

TITLE: Combined proton spectrometer for space research

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 3, 1965, 546-549

TOPIC TAGS: spectrometer, proton spectrometer, telescope spectrometer, combination spectrometer 21 10

ABSTRACT: A description is given of a four-channel telescope spectrometer designed for measuring the energy spectra of protons in the 3—100 Mev range in the presence of intense electron flux. A cylindrical silicon detector, 17 mm in diameter and 2.0 mm thick, is used as the dE/dx detector, where E is energy level. It has a sensitive layer of 1.6 mm and is mounted in front of a CsI crystal which serves as the E detector. The preamplifier and amplifier of the silicon detector are placed directly beside it. A detector bias of about 20 v is provided by a separate battery. The silicon detector senses particles whose dE/dx exceeds that of electrons (protons, deuterons, α-particles, etc.) and confines proton energy measurements to the 3—100 Mev range. The cylindrical CsI crystal is 15 mm in diameter and 30 mm in

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L 53715-65

ACCESSION NR: AP5014116

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height, and is covered on three sides by a plastic anticoincidence cap. The crystal, the cap, and the photomultiplier are shielded from electrons having energies up to 8 Mev, and the crystal is protected from light by an aluminum foil 10 μ thick. Fig. 1 of the Enclosure shows a block diagram of the spectrometer. Negative pulses from the FEU-16 photomultiplier are transmitted to the emitter follower (input resistance, about 200 Kohm; input capacitance, 5—8 pf). The maximum signal transmitted without distortion is about 5 v. With an emitter resistance of 68 ohm, the output pulses transmitted to the three-channel analyzer, consisting of three integral discriminators, are set to threshold levels between 0.1 and 4 v. At the discriminator output, the negative pulses have a duration of 1.0 μsec and a rise time of 0.05 μsec. The pulses are transmitted from the photomultiplier to a circuit of rapid component separation which uses two pulse transformers. The pulses transmitted from the separation circuit are shaped by an integral discriminator circuit and then inverted. A delay line with t = 0.25 μsec is required because the separation circuit shapes pulses with a delay of about 0.25 μsec. The amplified signals from the silicon detector are transmitted to the shaper, which is a monostable multivibrator with a threshold of 50—100 Mv. The pulses from the detector, the three integral discriminators, and the separation circuit are transmitted to double coincidence and anticoincidence circuits. The double coincidence and anticoincidence circuits, no. I, II, III, and anticoincidence no. IV, correspond to the registration

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L 53715-65

ACCESSION NR: AP5014116

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of protons in the 20—100, 40—100, 60—100, and 3—20-Mev energy ranges. The resolution time of the coincidence circuits is about 1 μsec, ensuring a count rate of 1.2×10^5 pps, or registration of 10^6 proton/cm^2 sec. Tests at +50 to −20C have demonstrated that threshold fluctuation does not exceed ±10%. The dimensions of the electronic circuit are 38 x 30 x 14 mm. The entire electronic circuit, including the high-voltage transformer for the photomultiplier, does not consume more than 0.3 w. Orig. art. has: 3 figures. [DW]

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Institut yadernoy fiziki (Moscow State University, Institute of Nuclear Physics)

SUBMITTED: 03Jun64

ENCL: 01

SUB CODE: SV, OP

NO REF SOV: 004

OTHER: 003

ATD PRESS: 4020

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L 53716-65 EEC-4/EWO(v)/EWT(l)/EWT(m)/EEC(t)/FCC/EWA(h) Pa-5/Pi-4/Pq-4/Po-4/
Pae-2/Peb GW

ACCESSION NR: AP5014117 UR/0203/65/005/003/0550/0553
550.388.2

57
56
B

AUTHOR: Savenko, I. A.; Savun, O. I.; Yurovskiy, A. V.

TITLE: Device for registering 3—14-Mev protons, α-particles, and nuclei of Z > 2

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 3, 1965, 550-553

TOPIC TAGS: proton counter, alpha particle counter, particle counter, radiation measurement

10 19

ABSTRACT: A five-channel device has been designed for the registration of 3—14-Mev protons, α-particles, and nuclei of Z > 2. Three channels measure protons, one channel, α-particles, and one channel nuclei of Z > 2. The surface-barrier type detector is made of n-type silicon (resistivity of about 600 ohm-cm) coated with tin dioxide, silver, and aluminum (0.5 μ thick). The thickness of the nonsensitive layer does not exceed 200 mg/cm^2. The detector was mounted in a kovar housing. Pulse amplitude at the detector output is about 1 mv/Mev, and natural resolution of the detector is better than 1%. A preamplifier is mounted together with the detector. The overall gain of amplifier and preamplifier is about 300. The shaper is a monostable multivibrator yielding positive output pulses of 6 μsec in duration

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L 53716-65

ACCESSION NR: AP5014117

and 3 v in amplitude. Its threshold level is about 100 mv. The scaling system has several high-frequency triggers. The circuit makes it possible to register with an error of not more than 10% up to 6×10^4 pps, i.e., 10^6 part/cm^2/sec/ster. The 6 v power supply has a stability of better than ±1.5%. The overall dimensions of the device are 38 x 30 x 14 mm. Amplifier current drain is 1.5 mamp and the shaper requires 5 mamp. The channel for α-particles has a registration threshold of 2 Mev, and particles in the 2—18-Mev band are registered. The channel for nuclei of $Z > 2$ has a threshold of 6 Mev. The channels for protons register in the 0.3—8, 7—11, and 11—14-Mev band. Orig. art. has: 3 figures. [DW]

ASSOCIATION: Moskovskiy gosudarstvennyy universitet, Institut yadernoy fiziki (Moscow State University, Institute of Nuclear Physics)

SUBMITTED: 03Jun64 ENCL: 00 SUB CODE: NP

NO REF SOV: 003 OTHER: 005 ATD PRESS: 4020

Card 2/2

L 34167-65 EWG(j)/EWT(m)/EPF(c)/EPR/EWP(j)/EWP(t)/EWP(b)/EWA(h)/EWA(1) Pc-4/
Pr-4/Ps-4/Peb DIAAP/IJP(c) RM/JD S/0188/65/000/001/0055/0063
ACCESSION NR: AP5005149 51

AUTHOR: Bednyakov, A. A.; Dvoretskiy, V. N.; Sevenko, I. A.; Tulinov, A. F. 48 B

TITLE: Multiple scattering of 75--200 keV protons in solids 19 20-

SOURCE: Moscow. Universitet. Vestnik. Seriya 3. Fizika, astronomiya, no. 1, 1965, 55-63

TOPIC TAGS: proton scattering, aluminum, copper, polystyrene, multiple scattering, thin film

ABSTRACT: This is a continuation of an investigation of multiple scattering of heavy particles of low energy ($< 5 \times 10^5$ eV) in substances with different atomic numbers Z (ZhETF v. 42, no. 3, 740, 1962). In the present work the authors measure the angular distribution of protons multiply scattered by heavier elements such as thin films of copper, aluminum, and polystyrene. 15 The proton energies were the same as in the earlier investigation, 100--200 keV. In addition, the earlier results with carbon were made more precise at energies less than 100 keV. The proton source was a small electrostatic generator of the open type with four-electrode accelerator tube. The targets of copper and aluminum were made by evaporating the 27 27

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ACCESSION NR: AP5005149

metals in vacuum on organic films of thickness 100--200 $\mu g/cm^2$, while the carbon target was polystyrene film produced on a glass surface from a solution of polystyrene in dichloroethane. The steps taken to determine the target thickness more accurately than in the past are described. The proton energy was measured with a 90° electrostatic analyzer placed behind the scattering chamber. The reduction of the measurements of the angular distributions of the protons were described by the authors elsewhere (Pribory i tekhnika eksperimenta no. 6, 35, 1962). The measured angular distributions were analyzed with the aid of the theories of Moliere (G. Moliere, Z. Naturforsch. 3a, 78, 1948) and Bethe (H. A. Bethe, Phys. Rev. v. 89, 1256, 1953). The results show that the Moliere-Bethe theory describes multiple scattering of low energy protons (up to 40--50 keV) in solid substances. The use of the statistical Thomas-Fermi model for the calculations yields satisfactory agreement with the results obtained for both copper and aluminum. In the case of calculations of scattering in lighter elements, it is necessary to employ for the scattering potential more accurate approximations, obtained by the Hartree-Fock method, although the statistical theory results in an error (underestimate) of only about 20%. "In conclusion, we thank A. I. Petrukhin, who played a large part in the preparation and performance of the experiments, and also Kh. I. Andrianova, who did much work on the calculations and preliminary processing of the results."

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L 34167-65

ACCESSION NR: AP5005149

Orig. art. has: 7 figures, 4 formulas, and 3 tables.

ASSOCIATION: NIIYeF

SUBMITTED: 10Feb64 ENCL: 00 SUB CODE: NP

NR REF SOV: 002 OTHER: 006

Card 3/3

SAVENKO, I. A.; GRIGOROV, N. L.; NESTEROV, V. Ye.; RAPOPORT, I. D.; SKURIDIN, G. A.

"Investigation of primary cosmic rays from the scientific space station proton-I."

paper presented at the 16th Congress, Intl Astronautical Federation, Athens, 12 Sep 65.

SAVENKO, I.A.; PISARENKO, N.F.; SHAVRIN, P.I.; NESTEROV, V.Ye.

Monitoring the cosmic radiation level during the flight of the space ships "Vostok-3", "Vostok-4", "Vostok-5", and "Vostok-6." Vest.Mosk. un. Ser. 3: Fiz., astron. 20 no.2:40-43 Mr-Ap '65.

(MIRA 18:5)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo universiteta.

L 2886-66 FSS-2/EWT(l)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GS/GW

ACCESSION NR: AT5023607 UR/0000/65/000/000/0381/0387

AUTHOR: Vernov, S. N.; Mel'nikov, V. V.; Savenko, I. A.; Savin, B. I.; Pervaya, T. I.

TITLE: Recording of charged particles of energies of 0.1—10 kev with a spherical electrostatic analyzer 54

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 381-387

TOPIC TAGS: satellite, satellite data storage, particle counter, electron density, ion density/Elektron 2 satellite

ABSTRACT: Identical spherical electrostatic analyzers 18 were used to record positive and negative particles 12 with energies of up to 1 kev on Cosmos-12 12 and Cosmos-15 12 and up to 10 kev on Elektron-2. 12 Each analyzer was comprised of a spherical capacitor some 60 mm in diameter, with input apertures leading to plates spaced 12 mm apart, on which a periodic high voltage was programmed so as to allow passage through the annular gap of only particles of a desired energy range. A Faraday cylinder at the

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ACCESSION NR: AT5023607

gap output served as the collector. The input apertures and the Faraday cylinder were furnished with biased grids to eliminate thermal particles and secondary emission, respectively. A diagram of the two analyzers used on Elektron-2 is shown in Fig. 1 of the Enclosure; accumulated charge was converted to binary code. The Cosmos data generally showed that electron flux at the 1-kev level did not exceed $10^7/cm^2/sec/kev$ at night and was only slightly higher by day. A maximum was noted during the southernmost portions of orbit, in a region south of New Zealand, attaining up to $12 \times 10^8/cm^2/sec/kev$. Electron fluxes recorded on Elektron-2 showed strong variations at sunrise and sunset (referred to the satellite); these variations reached values on the order of $10^9/cm^2/sec/kev$. Irregular variations in flux readings correlated with known geomagnetic events observed during the flight. Data show that the satellite was at all times within the magnetosphere. Positive ion flux registered by Elektron-2 in the 0.1—10-kev range did not exceed $5 \times 10^7/cm^2/sec$. Orig. art. has: 5 figures and 1 table. [SH]

ASSOCIATION: none

SUBMITTED: 02Sep65

ENCL: 01

SUB CODE: ES, NP

NO REF SOV: 008

OTHER: 003

ATD PRESS: 4109

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L 2886-66
ACCESSION NR: AT5023607

ENCLOSURE: 01

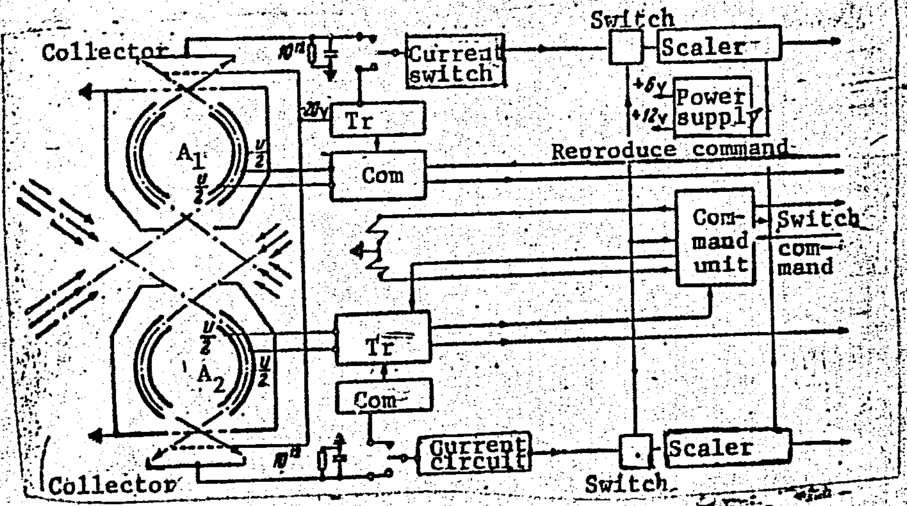

Fig. 1. Spherical particle analyzer on Elektron-2

Tr - High voltage transformers; Com - commutators;
A_1 - 0.1—1 kev range; A_2 - 1—10 kev range

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L 2322-66 EWT(d)/FSS-2/EWT(1)/FS(v)-3/EEC(k)-2/FCC/EWA(h) TT/AST/GS/GW
ACCESSION NR: AT5023616 UR/0000/65/000/000/0434/0448

AUTHORS: Vernov, S. N.; Nesterov, V. Ye.; Pisarenko, N. F.; Savenko, I. A.; Tverskaya, L. V.; Shavrin, P. I.

75
B+1

TITLE: Investigation of the upper Van Allen radiation belt at low altitudes during the flights of the satellite ships and artificial earth satellites "Kosmos" from 1960 to 1963

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 434-448

TOPIC TAGS: sputnik, artificial earth satellite, Van Allen belt, radiometry, geomagnetic field

ABSTRACT: The results of radiometric measurements of the Van Allen radiation belt from several "sputnik" and "Kosmos" satellites are discussed. The radiometers consisted of inner and outer scintillation counters and gas discharge counters. The internal scintillation counters recorded electron energies between 50 to 300 kev. Among the various recorded measurements was the variation of radiation intensity with longitude, which was quite apparent in the outer belt and which could be explained clearly by the structure of the actual geomagnetic field. Several

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L 2322-66

ACCESSION NR: AT5023616

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altitude versus longitude particle drift trajectory curves were obtained to explain the various geomagnetic anomalies observed. Next, data were obtained to determine the location of maxima in the outer Van Allen belt. Over a period of four years this varied within the limits $4 \leq L \leq 6$, and this variation could be associated with geomagnetic disturbances. As a third observation, an electron energy gap was discovered between the outer and inner radiation belts on $2 \leq L \leq 3$. The special profile of the outer Van Allen belt is shown to be characterized by the location of a maximum, a maximum radiation intensity I_{max}, and a half-width corresponding to $0.5\ I_{max}$. Intensity measurements and geomagnetic line-of-force cross section estimates gave the following values for the electron lifetimes in the outer belt: for electron energies > 100 kev, $T = 5 \times 10^5$ sec, for energies > 600 kev, $T = 5 \times 10^7$ sec. Orig. art. has: 13 figures and 1 formula. [04]

ASSOCIATION: none

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE: AA, SV

NO REF SOV: 015 OTHER: 012 ATD PRESS: 4107

Card 2/2 hd

L 3226-66 EWT(1)/EWT(m)/FCC/EWA(h) DIAAP GS/GW

ACCESSION NR: AT5023617 UR/0000/65/000/000/0448/0454

AUTHORS: Nesterov, V. Ye.; Pisarenko, N. F.; Savenko, I. A.; Tel'tsov, M. V.; Shavrin, P. I.; Sharvina, K. N.

50
B+1
11

TITLE: Investigation of the inner Van Allen belt and the artificial radiation belt of the earth at low altitudes during 1960-1964

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 448-454

TOPIC TAGS: radiation belt, Van Allen belt, magnetic anomaly, atmosphere

12

ABSTRACT: Investigations carried out during 1960-1964 of the inner Van Allen and artificial radiation belts of the earth at low altitudes are discussed with emphasis on the South Atlantic magnetic anomaly off the coast of Brazil. Most of the measurements of particle fluxes were made on five satellites of the "Kosmos" series and the second and third cosmic ships. It was found that in the magnetic shells $1.2 < L < 1.4$ the intensity of particles toward the east from the anomaly was greater than that toward the west from the anomaly, and for

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L 3226-66
ACCESSION NR: AT5023617

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1.5 ≤ L ≤ 2.1 the reverse was true. Thus, the main component of the flux of particles in the first case was protons and in the second case--electrons. It is also concluded from measurements of the change in electron intensity with altitude that the magnitude of the standard atmosphere is significantly greater than that obtained by D. G. King-Hele and M. Janice (Proc. Roy. Soc., A270, N 1343, 562, 1964). The lifetime of electrons in the artificial radiation belt created by a high-altitude thermonuclear explosion on July 9, 1962 was found to range from 170 days for L=1.3 down to about 70 days for larger L up to 2.0. Orig. art. has: 9 figures; and 1 table. [04]

ASSOCIATION: moneuznaya kon[illegible] fizike kosmicheskogo [illegible], Moscow (All-Union Conference on [illegible]ics)

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE: ES, SV

NO REF SOV: 007 OTHER: 007 ATD PRESS: 4106

Card 2/2

L 21028-66 FSS-2/EWT(1)/FCC/EWA(d)/EWA(h) TT/GS/GW

ACCESSION NR: AT5023619 UR/0000/65/000/000/0460/0464

AUTHORS: Vernov, S. N.; Savenko, I. A.; Tel'tsov, M. V.; Shavrin, P. I. 16 B+1

TITLE: Some results of measurements in the outer Van Allen belt by the satellite Kosmos-41

18 18

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 460-464

TOPIC TAGS: radiation belt, Van Allen belt, proton bombardment, electron bombardment

ABSTRACT: Some results of measurements of proton and electron intensities in the outer Van Allen belt are presented. The measurements were made during September and October 1964 on the satellite "Kosmos-41," which was launched August 22, 1964. The form, shielding, geometric factor, and energy range of the nine detectors used are given. The results are presented as a series of graphs giving the measured particle intensities, magnetic field intensity, and altitude above the earth's surface as a function of the parameter L. The intensity of protons with

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L 21028-66

ACCESSION NR: AT5023619

0

energies 0.4—3 Mev reached $2 \cdot 10^5/cm^2$ sec ster for L=3.5, whereas the intensity of protons with energies 3—8 Mev during the same time was always below the detector threshold of $3/cm^2$ sec ster. The maximum electron intensities were measured at L=5. Orig. art. has: 4 figures and 2 tables. [04]

ASSOCIATION: none [illegible]naya konferentsiya po fizike [illegible], [illegible] Moscow (All-Union Conference on Space Physics)

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE: ES, SV

NO REF SOV: 003 OTHER: 002 ATD PRESS: 4106

Card 2/2 BK

L 3236-66 EWT(1)/FCC/EWA(h) GS/GW

ACCESSION NR: AT5023621 UR/0000/65/000/000/0465/0466

AUTHORS: Savenko, I. A.; Shavrin, P. I.; Tverskaya, L. V.

TITLE: Corpuscular radiation in equatorial regions at low altitudes

40
B+1

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 465-466

TOPIC TAGS: electron flux, magnetic anomaly, cosmic ray, 12 albedo

ABSTRACT: It is assumed that the intensity of electron flux at low altitudes (300÷400 km) in equatorial regions is due to neutron decay in the albedo of cosmic rays. Electrons were captured at different heights. By knowing the latitude and the pitch angle (for known longitude), it is possible to compute the rate of accumulation. It was found that each energy value of electron corresponds to a definite height. Computations of expected intensities of electron flux are shown in Table 1 of the Enclosure. The intensity on ascending branches of the drift orbit is small, since electrons quickly move upward from any given height. The greatest intensity may be expected over the Pacific Ocean and over South America

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L 3236-66

ACCESSION NR: AT5023621

(at the western edge of the Brazilian magnetic anomaly). The neutron mechanism proves to be rather potent in creating an intensity of about 10^3 per cm^2 per sec during longitudinal drift. Orig. art. has: 3 tables. [04]

ASSOCIATION: none uznaya kon[illegible] po fizike kosmicheskogo prostranstva (All-Union Conference on Space [illegible])

SUBMITTED: 02Sep65 ENCL: 01 SUB CODE: [illegible], ES, NP

NO REF SOV: 002 OTHER: 002 ATD PRESS: 4106

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ACCESSION NR: AT5023621

ENCLOSURE: 01

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Table 1. Computations of expected intensities at an altitude of 500 km

$\lambda°$	$\lambda_0°$	t, sec	I, $cm^{-2} sec^{-1}$	$\lambda°$	$\lambda_0°$	t, sec	I, $cm^{-2} sec^{-1}$
290	332	$1,1 \cdot 10^4$	$1,9 \cdot 10^3$	154	54	$3,3 \cdot 10^3$	$6 \cdot 10^2$
268	350	$9,4 \cdot 10^3$	$1,7 \cdot 10^3$	128	66	$2 \cdot 10^3$	$3,6 \cdot 10^2$
224	18	$6,9 \cdot 10^3$	$1,3 \cdot 10^3$	100	100	0	0

λ is the longitude of observation; λ_0 is the longitude at which electrons with energies greater than 300 kev begin to accumulate after passing the longitude of observation; t is the drift time from λ_0 to λ (time of accumulation); and I is the intensity at the point λ.

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L 3234-66 EWT(1)/FCC/EWA(h) GS/GW

ACCESSION NR: AT5023625 UR/0000/65/000/000/0485/0486

AUTHORS: Grigorov, N. L.; Rapoport, I. D.; Savenko, I. A.; Skuridin, G. A. 34 B+1

TITLE: Problems and potentials of studying cosmic-ray particles of high and very high energies 12

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 485-486

TOPIC TAGS: cosmic ray particle, high energy particle, calorimeter, ionization, spark camera, nuclear emulsion, Cerenkov counter

ABSTRACT: Cosmic ray particles with energies up to about 10^{19} ev have been detected, but quantitative measurements are uncertain because the flux of high-energy cosmic particles is small at stations in high mountains and at sea level where they are observed and because no method of measuring individual particles has been available. Theory and experiment show a very weak dependence of interaction among high-energy particles on the energies of the primary particles. Most problems yet unsolved relative to nuclear interaction of high-energy particles and relative to the astrophysical aspect of cosmic rays require an ability to

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ACCESSION NR: AT5023625

measure the energy of each individual particle in order for a solution to be reached. The authors point out that the use of an ionization calorimeter in combination with various recording devices (nuclear photoemulsions, spark cameras, Cerenkov gas counters) permits detailed study of interaction processes of particles with energies of 10^{12}—10^{13} ev, study of the electron component of cosmic rays up to high energies, and a wide search for local sources of high-energy gamma quanta. By means of a large ionization calorimeter with an area of 10 m^2, raised beyond the atmospheric boundary, it would be possible to make direct measurement of compositions and energy spectra of primary cosmic rays in the energy range up to 10^{16} ev. [04]

ASSOCIATION: none znaya konferentsiya po fizike kosmicheskogo prostranstva (All-Union Conference on Space Physics)

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE: AA, NP

NO REF SOV: 002 OTHER: 000 ATD PRESS: 4106

Card 2/2

L 1539-66 FSS-2/EWT(1)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GS/GW

ACCESSION NR: AT5023629 UR/0000/65/000/000/0506/0509

AUTHOR: Basilova, R. N.; 44,55 Nesterov, V. Ye.; 44,55 Pisarenko, N. F.; 44,55 Savenko, I. A.; 44,55 Shavrin, P.I. 44,55

TITLE: Satellite cosmic ray investigations

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. 44,55 Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 506-509

TOPIC TAGS: cosmic ray, cosmic radiation, 12,44,55 spacecraft

ABSTRACT: Data are presented on time variations of cosmic radiation as recorded by a number of artificial earth satellites during the period between 19 August 1960 and 27 April 1963. STS-5 gas discharge counters were used as measuring instruments. The orbit parameters and times of measurement are summarized in Table 1 of the Enclosure. The recordings of the counters in each satellite were adjusted to the data of Kosmos-4 on the basis of measurements obtained within the stability period of radiation intensity during the solar activity. The data are adjusted to an altitude of 300 km. The radiation intensity changes with time, relative to

L 1539-66

ACCESSION NR: AT5023629

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the intensity during the August—December 1960 period on the high-latitude plateau, are charted together with the recordings of "Explorer 7" and stratospheric recordings by Charakhch'yan (Geomagnetizm i aeronomiya, 3, 1963, 304; Doklad na Vses. sov. po kosmicheskim lucham. Apatity, 1964) to show a general increase of intensity by roughly 25 percent during 1961 and the first quarter of 1962. This increase is attributed to the appearance of low-momentum particles, whose integral spectrum is deduced by plotting the differentials of the increase between Kosmos-4 and Kosmos-17 and Explorer-7, and between stratospheric data and the differential spectrum of the increase according to the aforementioned satellites and Kosmos-4. The data of the Kosmos and Explorer satellites are in fair agreement but differ from those of the stratospheric measurements. It is concluded that gas-discharge counters can be used advantageously in artificial earth satellites for investigations of cosmic radiation. Orig. art. has: 3 figures. [FP]

ASSOCIATION: none

SUBMITTED: 02Sep65 ENCL: 01 SUB CODE: AA, SV

NO REF SOV: 003 OTHER: 003 ATD PRESS: 4094

Card 2/3

L 1539-66

ACCESSION NR: AT5023629

ENCLOSURE: 01

Table 1. Orbit parameters and times of measurement

Satellite	Perigee, km	Apogee, km	Line of measurement	Count speed pulse/cm^2/sec
Second Sputnik	306	339	19 August 1960	3.25 ± 0.15
Third Sputnik	187	256	1 December 1960	3.25 ± 0.15
Kosmos-4	298	330	26-29 April 1962	4.44 ± 0.05
Kosmos-9	301	358	27 September-1 October 1962	4.44 ± 0.17
Kosmos-12	211	405	22-30 December 1962	4.08 ± 0.25
Kosmos-15	117	371	22-27 April 1963	4.26 ± 0.14

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L 2403-66 FSS-2/EWT(1)/EWT(m)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/DD/GS/GW

ACCESSION NR: AT5023639 UR/0000/65/000/000/0568/0572

AUTHORS: Nesterov, V. Ye.; Pisarenko, N. F.; Savenko, I. A.; Shavrin, P. I. 50

TITLE: Radiation safety problems of space flights B+1

SOURCE: Vsesoyuznaya konferentsiya po fizike kosmicheskogo prostranstva. Moscow, 1965. Issledovaniya kosmicheskogo prostranstva (Space research); trudy konferentsii. Moscow, Izd-vo Nauka, 1965, 568-572

TOPIC TAGS: radiation hazard, radiation protection, Van Allen belt, cosmic ray, astronaut, solar activity

ABSTRACT: Three types of radiation hazards encountered by astronauts and space vehicles during different space missions are discussed. First are the primary cosmic rays recorded by various Soviet space probes during the 11-year solar cycle. These data show that, depending on the solar activity, the radiation dose due to cosmic rays can vary between 10 and 25 rad/year, or 40 to 100 rem/year. About 92% of this biological dose is found to be due to the heavy-particle component of the cosmic rays ($Z \geq 10$). The second radiation hazard comes from the energetic protons and hard electron radiation from the Van Allen belts. Detailed Soviet satellite observations over the years 1960-1964 indicate that a significant contribution to

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L 2403-66
ACCESSION NR: AT5023639

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Van Allen belt radiation hazards comes from the radiation belt artificially created by the 1962 upper atmospheric nuclear explosions. The Voskhod-2 manned flight measured a 60 millirad dose on the astronauts Belyayev and Leonov. Furthermore, heavy damage to the space suits of astronauts may be caused by regions of soft radiation in the Van Allen belt. The third radiation hazard is the sudden, large scale, solar photospheric bursts which can generate 100—1000 rad/cm^2 radiation doses. The important protection factor here is an accurate prediction of such bursts and subsequent scheduling of space flights. Furthermore, a more accurate knowledge of solar burst physics and cosmic rays is necessary, especially an accurate knowledge of radiation spectra for high Z components, an accurate knowledge of energy and charge spectra of corpuscular radiation from solar bursts, and the time-resolution of solar bursts. Orig. art. has: 1 table. [04]

ASSOCIATION: none

SUBMITTED: 02Sep65 ENCL: 00 SUB CODE: SV, AA

NO REF SOV: 003 OTHER: 000 ATD PRESS: 4107

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Card 2/2

L 2464-66 FSS-2/EWT(1)/FS(v)-3/FCC/EWA(d)/EWA(h) TT/GW

ACCESSION NR: AP5020993 UR/0203/65/005/004/0645/0648
523.165

46

AUTHOR: Vernov, S. N.; Savenko, I. A.; Tel'tsov, M. V.; Shavrin, P. I.

45

TITLE: Measurement of 0.4—8 Mev protons by "Kosmos-41"

B

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 4, 1965, 645-648

TOPIC TAGS: proton intensity, satellite/Kosmos 41

ABSTRACT: Two semiconductor proton detectors, each capable of covering $\sim$1 sterad and sensitive to 400 kev—7 Mev and 3—8 Mev protons, respectively, were mounted on "Kosmos-41". Readings were taken for L = 3.5—10 (C. E. McIlwain's parameter). Results showed that maximum intensity for 0.4—3.0 Mev protons was $2 \cdot 10^5$ prot/cm^2 sec sterad at L = 3.5 and B = $7.6 \cdot 10^{-2}$ gauss. A comparison of data collected near the plane of the geomagnetic equator with those taken at higher latitudes, at L = 5, revealed that the dependence of intensity on height can be expressed as $(B/B_{equat})^{-k}$, where $k \approx 1$. The drop in proton intensity varied with L in the form L^{-n}, where n = 30; however, this depended on geomagnetic conditions and on variations in the

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L 2464-66

ACCESSION NR: AP5020993

outer radiation belt. Intense proton streams were observed at large values of L. [WC]
Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University); Institut yadernoy fiziki (Institute of Nuclear Physics)

SUBMITTED: 28Jan65 ENCL: 00 SUB CODE: ES, NP

NO REF SOV: 002 OTHER: 004 ATD PRESS: 4106

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Card 2/2

L 4401-66 EWT(l)/EWT(m)/FCC/T/EWA(h) IJP(c) GW

ACC NR: AP5025488 SOURCE CODE: UR/0203/65/005/005/0950/0951

40
B

AUTHOR: Maduyev, V. L.; Savenko, I. A.; Tel'tsov, M. V.

ORG: Institute of Nuclear Physics, Moscow State University (Moskovskiy gosudarstvennyy universitet. Institut yadernoy fiziki)

TITLE: Differential magnetic analyzer of low-energy electrons and protons

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 5, 1965, 950-951

TOPIC TAGS: radiation counter, particle counter, 19 gas discharge counter

ABSTRACT: A simple particle counter 19 is described which records selected energy ranges of trapped geomagnetic radiation. Electrons in the range of 25—120 kev and protons in the range of 0.5—3 Mev are registered in three tandem counter stages, so that differential counter readings give a spectral breakdown of energies. The counters are identical in form, each having a funnel-shaped input collimator with transverse baffles. The input counter has a mica window which passes electrons of > 25 kev and protons of > 0.5 Mev; counter 2 uses a permanent magnetic field to eliminate electrons below 50 kev; counter 3 uses an identical magnetic field plus an aluminum foil window, thus providing a cutoff level of 120 kev and 3 Mev for electrons and protons, respectively. The field in the gap is approximately 400 oe. Type SBT-9 gas discharge counter elements are used. The entire assembly weighs 15 grams. Orig. art. has: 2 figures. [SH]

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L 4401-66

ACC NR: AP5025488

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SUB CODE: NP, ES/ SUBM DATE: 28Dec64/ ORIG REF: 002/ OTH REF: 000/ ATD PRESS: 4126

Card 2/2

EWT(m)/FCC/T/EWA(h) IJP(c) GW

ACC NR: AP5024626

SOURCE CODE: UR/0048/65/029/009/1656/1663

AUTHOR: Grigorov, N.L.; Rapoport, I.D.; Savenko, I.A.; Skuridin, G.A.; Shestoperov, V. Ya.

ORG: none

59
03
19

TITLE: Some problems and possibilities relating to investigation of cosmic rays in the 10^{11} to 10^{13} eV range /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1656-1663

TOPIC TAGS: primary cosmic ray, secondary cosmic ray, energy distribution, nucleon interaction, artificial earth satellite, high energy particle

ABSTRACT: The authors review the available data on the energy spectrum and absorption and interaction mean free paths of nuclear-active cosmic ray particles with energies from 10^{11} to 10^{13} eV. The data are discordant, and part of this discordance is traced to neglect of the fluctuation of the fraction of the primary energy that is transferred to neutral pions in an elementary interaction event. There is evidence that the absorption and interaction mean free paths are not energy independent. It would be desirable directly to measure the interaction cross section, but it does not seem practical to do this. To measure the interaction free path in carbon for nuclear-active

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L 4475-66

ACC NR: AP5024626

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particles with energies above 10^{13} eV to an accuracy of 10 % by means of a 10 m^2 ionization calorimeter operating at 3200 m above sea level, for example, would require 60 years of continuous observation. A satellite-borne ionization calorimeter with a geometric factor of 10^4 cm^2 sterad, however, could accumulate very valuable data within a few months. Meanwhile, it is anticipated that new installations now under construction or recently operative will soon clarify the situation with regard to the energy spectrum of the nuclear-active component and the altitude dependence of the nucleon component. Orig. art has: 11 formulas, 2 figures, and 5 tables.

SUB CODE: NP/ SUBM DATE: 00/ ORIG REF: 018/ OTH REF: 004

Card 2/2

L 4127-66 FSS-2/EWT(1)/FS(v)-3 TT/GW

ACCESSION NR: AP5026220 UR/0048/65/029/010/1794/1799

AUTHOR: Vernov, S.N.; Mel'nikov, V.V.; Savenko, I.A.; Savin, B.I. 64 B

TITLE: Investigation of low-energy charged particles with the Cosmos 12, Cosmos 15, and Electron 2 satellites /Report, All-Union Conference on Cosmic Ray Physics held at Apatity, 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 10, 1965, 1794-1799

TOPIC TAGS: artificial earth satellite, spectrometer, charged particle, electron flux, ion flux, low energy particle

ABSTRACT: Spherical electrostatic charged particle analyzers carried by the Cosmos 12, Cosmos 15, and Electron 2 satellites are described very briefly and preliminary results obtained with them are presented. The radii of the two concentric spherical deflecting electrodes were 5.4 and 6.6 cm, and the charged particles traversing the analyzer were collected in a Faraday cup. The minimum global intensity that could be recorded was approximately 6 x 10^6 E_0^{-1} particles/cm^2 sec kev; this intensity is two orders of magnitude below the threshold intensity for the instrument carried by Explorer 12. The luminosity at maximum transmission was

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L 4127-66

ACCESSION NR: AP5026220

0.7 cm^2 sterad with $\Delta E/E_0 \approx 30\%$, and the geometric factor was 0.1 E_0 cm^2 sterad kev. The analyzer on the Cosmos 12 was sequentially programmed to record 0.5 kev electrons or 1 kev electrons or ions, and that on the Cosmos 15 recorded 1 kev electrons or ions and was provided with a positively charged screen to reject thermal ions. The Electron 2 carried two analyzers, which were programmed to record charged particles of seven different energies ranging from 0.1 to 10 kev. The fluxes of 1 kev charged particles observed with the two Cosmos satellites were ordinarily near or below the threshold. Fluxes exceeding 10^7 particles/cm^2 sec kev observed on the daylight side are ascribed to photoelectrons from the screen, although there are indications of the presence of particle fluxes. Steady fluxes up to 2 x 10^7 particles/cm^2 sec kev were observed south of New Zealand in the region of the maximum southern isochasm. It is suggested that an intensity increase over the equatorial Pacific observed on 27 Dec may be associated with the solar flare of 24 Dec. The Electron 2 measurements revealed a broad region near the Earth of increased electron intensity. The extent of this region and its electron intensity fluctuated considerably. Electron intensities of 5 x 10^8 particles/cm^2 sec kev at 0.2 kev and 5 x 10^7 particles/cm^2 sec kev at 10 kev were observed in this region. Intensity increases were also sometimes observed near the apogee. Orig. art. has: 5 figures. [15]

Card 2/3

L 4127-66

ACCESSION NR: AP5026220

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: NP, ES

NO REF SOV: 004

OTHER: 005

ATD PRESS: 4127

Card 3/3

L 2759-66 EWT(d)/FSS-2/EWT(l)/FS(v)-3/EEC(k)-2/FCC/EWA(d)/EWA(h) AST/TT/GW
ACCESSION NR: AP5021003 UR/0203/65/005/004/0749/0751
523.165 57

AUTHOR: Savenko, I. A.; Savin, B. I.; Mel'nikov, V. V.; Shavrin, P. I.; 56
Markelova, T. N. B

TITLE: Study of 1-kev charged particle streams by Kosmos-15

12

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 4, 1965, 749-751

TOPIC TAGS: charged particle measurement, satellite/Kosmos 15

9M 12

ABSTRACT: A spherical electrostatic analyzer, adjusted to 1-kev electron energies and containing a +12 v grid at its opening to protect the instrument compartment from positive ion bombardment, was installed on "Kosmos-15", launched 22 April 1963. The analyzer's maximum sensitivity was 20 mv, which corresponded to ~ $1.2 \cdot 10^7$ particles/cm^2 sec kev. The measurement program included four stages, the first two stages consisting in recording 1-kev electrons, the third stage — 1-kev positive ions, while during the fourth stage the spheres made contact with the satellite body. The cycle was thereafter repeated. Measurement results (see Fig. 1 of Enclosure) indicated the presence of two maxima at identical latitudes on either side

Card 1/3

L 2759-66
ACCESSION NR: AP5021003

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of the equator, where the daily shift of these maxima exhibited a motion toward the north. Orig. art. has: 3 figures. [WC]

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics, Moscow State University)

SUBMITTED: 05Oct64
ENCL: 01
SUB CODE: ES, NP

NO REF SOV: 003
OTHER: 000
ATD PRESS: 4102

Card 2/3

L 2759-66
ACCESSION NR: AP5021003

ENCLOSURE: 01

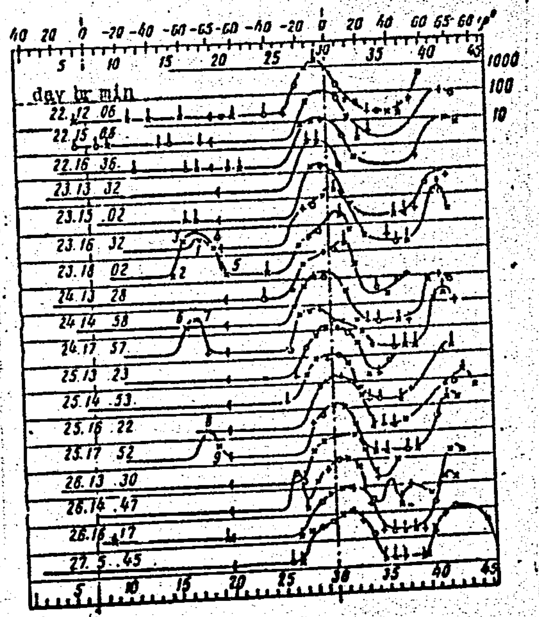

Fig. 1. Measurement results for first few days of flight

Column at left indicates date and time of passage over night equator on a given orbit. Vertical scale indicates difference in potentials on storage capacitor in mv

φ° - Geographical latitude;
+ - electron measurement;
x - positive ion measurement;
o - absence of field.

Card 3/3

L 11251-66 FSS-2/EWT(1)/EWT(m)/FS(v)-3/EWA(h) TT/GW

ACC NR: AP6002767 SOURCE CODE: UR/0203/65/005/006/1129/1132

AUTHOR: Savenko, I. A. 55; Tel'tsov, M. V. 55; Maduyev, V. L. 65; Savun, O. I. 55; Yurovskiy, 48 A. V. 55

ORG: Moscow State University, Institute of Nuclear Physics 55 (Moskovskiy gosudarstvennyy universitet. Institut yadernoy fiziki) 46 23

TITLE: Radiometric instrumentation on board the Cosmos-41 satellite 12

SOURCE: Geomagnetizm i aeronomiya, 19,55 v. 5, 12 no. 6, 1965, 1129-1132

TOPIC TAGS: radiation measurement, scintillation counter, gas discharge counter, semiconductor counter/Cosmos 41 satellite

ABSTRACT: The RE-2 26 radiometric equipment 10 was mounted on Cosmos-41 to control the radiation level, to measure the total absorbed radiation dose, and to study the composition of ionizing radiation. It consisted of the following components: 1) A scintilation counter with an FEU-16 photomultiplier and an NaI(Tl) crystal 30 mm in diameter and 14 mm high. The counter was used to record both the total energy release in the crystal and the number of particles with energies greater than 90 kev and the number of particles with energies greater than 4 Mev. 2) Two end-window SBT-9 gas-discharge counters. 10 To reduce the effects of bremsstrahlung radiation, the side surfaces of the counters were coated with a layer of aluminum and lead of 1.5 g/cm^2. 3) N-p semiconductor counters for recording medium-energy protons.

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ACC NR: AP6002767

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One of the counters was coated with 70-μ aluminum foil with uranium salt deposited on its inner surface for calibration purposes. This counter generated control pulses from uranium α-particles. The geometrical factor of each of the counters was about 0.07 cm^2 sterad. 4) An STS-5 gas-discharge counter. 5) SI-ZBG gas-discharge counters for continuous recording of the absorbed radiation dose. Orig. art. has: 3 figures. [JR]

SUB CODE: 17/ SUBM DATE: 28Dec64/ ORIG REF: 004/ OTH REF: 002/ ATD PRESS: 4173

80

Card 2/2

GRIGOROV, N.L.; NESTEROV, V.Ye.; RAPOPORT, I.D.; SAVENKO, I.A.; SKURIDIN, G.A.

Nuclear laboratory in space; a new stage in the study of superhigh-energy particles. Priroda 54 no.12:7-15 D '65.
(MIRA 18:12)

SAVENKO, I.A.; TEL'TSOV, M.V.; MADUYEV, V.L.; SAVJN, O.I.;
YUROVSKIY, A.V.

Radiometrical equipment on board the satellite "Kosmos-41."
Geomag. i aer. 5 no.6:1129-1132 N-D '65. (MIRA 19:1)

1. Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta. Submitted December 28, 1964.

L 9604-66 EWT(1)/FCC/EWA(h) GW

ACC NR: AR5020397 UR/0313/65/000/008/0035/0035

57

B

SOURCE: Ref. zh. Issledovaniye kosmicheskogo prostranstva, Abs. 8.62.238

AUTHOR: Vernov, S.N.; Chudakov, A.Ye.; Gorchakov, Ye.V.; Logachev, Yu.I.; Nesterov, V.Ye.; Savenko, I.A.; Shavrin, P.I.

TITLE: Radiation belts of the earth

CITED SOURCE: Geofiz. byul. Mezhduved. geofiz. kom-t pri Prezidiume AN SSSR, no. 14, 1964, 96-109

TOPIC TAGS: satellite, rocket, radiation effect, cosmic radiation

TRANSLATION: A short outline is given of the results obtained from studies conducted using Soviet artificial satellites and cosmic rockets of the radiation belts and of primary cosmic radiation beyond the limits of the magnetic sphere.

SUB CODE: 04,03 ENCL: 00

Card 1/1

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59

L 45258-66

ACC NR: AP6016330

5

high-level observation stations are mentioned. Problems to be solved are the very small density of cosmic ray fluxes, the need to measure the energy of primary particles, and the fact that they are usually mixed with secondary particles unless measured outside the atmosphere. The authors state that artificial earth satellites have opened the way to the use of cosmic rays for the study of super-high energies. They then describe the appearance and structure of the Proton-1 space station and the instruments it carries. They also give a detailed description of the ionization calorimeter used on Proton 1 to study high-energy particles, designed in 1954 by Professor N. L. Grigorov and produced and studied in the cosmic-ray laboratory of Moscow State University in the late fifties- and early sixties. The authors then describe the structure and operation of the SEZ-14 spectrometer for energies and charges, as well as its proportional counter and interaction detector. In order to remedy the lack of information on the energy spectrum of primary electrons, the Proton 1 carries a SEX-12 instrument to register high-energy electrons and their energy spectra. A GG-1 instrument was also installed on Proton 1 to study gamma astronomy. This study of gamma rays will facilitate obtaining information not only on sources of cosmic rays, but also on the astrophysical characteristics of interplanetary space. Information on cosmic rays in the Megagalaxy can be obtained

Card 2/3

L 45258-66

ACC NR: AP6016330

at present only by measurement of intensity and spectra of gamma-quanta of an energy exceeding 50 Mev. The author concludes that the heavy Earth satellites Proton 1 and the recently launched Proton 2 are pioneers in the study of interactions of energies at 10 to 1000 gev. Orig. art. has: 9 figures. [GC]

SUB CODE: 03, 04, 20/ SUBM DATE: none/

Card 3/3

L 02974-67 FSS-2/EWT(1)/FCC TT/GW

ACC NR: AP6032854 SOURCE CODE: UR/0020/66/170/003/0565/0566

AUTHOR: Grigorov, N. L.; Maduyev, V. L.; Pisarenko, N. F.; Savenko, I. A.

84

B

ORG: Institute of Physics im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Investigation of cosmic radiation by the Luna-10 artificial satellite

SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 565-566

TOPIC TAGS: ARTIFICIAL SATELLITE, cosmic radiation, lunar orbit, lunar satellite, RADIATION COUNTER, LUNA-10 ARTIFICIAL SATELLITE

ABSTRACT: Protons with energies exceeding 50 Mev and electrons with energies greater than 5 Mev were recorded by an end-window gas discharge counter carried on Luna-10. This counter was protected by a 2.5 g/cm ^{2} copper shield. The soft radiation (protons with energies >0.5 Mev and electrons with energies >40 kev) was registered by another counter of the same type which was also shielded by copper but had, in addition, a 1.2 mg + 0.3 mg/cm^2 mica and gold sheet forming a small window 0.5 cm in diameter. The total geometry factor of the counters for the isotropic hard radiation was 2.6 ± 0.2 cm^2. The counting rate was recorded on a logarithmic scale. The error in transmission of the radiation count data did not exceed 3%. The average count rate of hard radiation recorded between 31 March and 3 April 1966 was 12.2 ± 0.1 particles/sec, which corresponds to a flux of 4.7 ± 0.4 particles/cm^2·sec. The data indicate that the intensity of primary cosmic radiation is characteristic

UDC: 537.591+523.165

Card 1/2

L 02974-67

ACC NR: AP6032854

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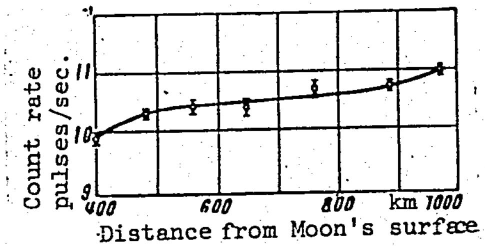

Fig. 1. Radiation counting rate as a function of distance from the Moon.

for the minimum solar activity cycle. Luna-10 was placed in a selenocentric orbit on 3 April 1966 with an apogee of 1000 km, a perigee of 350 km, and an angle of inclination of 72° with respect to the Moon's axis. The counting rate is plotted as a function of altitude in Fig. 1. Orig. art. has: 1 figure.

SUB CODE: 04,22,18/ SUBM DATE: 04Jul66/ ORIG REF: 001/ ATD PRESS: 5099

Card 2/2

L 21603-66 EWT(1)/EWT(m)/EWG(m)/T/EWA(h) IJP(c)

ACC NR: AP6007817 SOURCE CODE: UR/0120/66/000/001/0100/0106

AUTHOR: Grigorov, N. L.; Gadalov, A. N.; Mineyev, Yu. V.; Rapoport, I. D.; Savenko, I. A.

28

36

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University (NII yadernoy fiziki MGU)

B

TITLE: Pulse-height recording and logarithmic conversion of pulse heights in the 10^4-10^5 dynamic range

25

SOURCE: Pribory i tekhnika eksperimenta, no. 1, 1966, 100-106

TOPIC TAGS: pulse recording, cosmic ray measurement

19

ABSTRACT: Intended for modern high-energy cosmic-ray investigations, a new logarithmic pulse-height converter covers a dynamic range up to 10^5 by means of an automatic conversion-scale change. The instrument error remains constant (10%) throughout the range. The logarithmic pulse-height-into-number conversion is effected by an oscillatory circuit tuned to the input pulses; the dynamic range of this circuit is 1000. A block diagram and a principal circuit of the transistorized pulse-

UDC: 621.384.387

Card 1/2

L 21603-66

ACC NR: AP6007817

2

height converter are explained, and technical data on the principal parts is given. Also, the linear pulse gate, preamplifier, and control and scale-change circuit are described. Stable operation of the converter within −20+50C is claimed. A pulse-height discriminator circuit was suggested by A. S. Melioranskiy. "The authors wish to thank A. A. Sanin for his useful advice." Orig. art. has: 5 figures and 2 formulas. [03]

SUB CODE: 18, 09 / SUBM DATE: 03Feb65 / ORIG REF: 005/ ATD PRESS: 4218

dda

Card 2/2

L 33275-66 EWT(1)/FCC GW

ACC NR: AP6011709 SOURCE CODE: UR/0203/66/006/002/0377/0380 63

61

B

AUTHOR: Savenko, I.A.; Tel'tsov, M. V.; Shavrin, P.I.

ORG: Institute of Nuclear Physics, Moscow State University (Institut yadernoy fiziki, Moskovskiy gosudarstvennyy universitet)

TITLE: Variations of the intensity of protons and electrons of the outer radiation belt

12

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 2, 1966, 377-380

TOPIC TAGS: radiation belt, particle distribution, satellite data analysis

ABSTRACT: This article gives the results of the processing of the data during the period from the end of August to the end of December 1964 which was gathered by the radiometric apparatus installed on the satellite Cosmos-41. 12 An examination of the curves of the intensity of protons with energies of 0.4—7 MeV shows that the outer part of the protonosphere, beginning with $L \geq 5.5$, undergoes substantial variations. From a comparison of the data on the measurement of the density of protons and electrons of the outer radiation belt for various satellite flights it is concluded that the greatest time variations of the intensity of electrons at a fixed L occurs in the region L=5—7, the variation of the counting rate being associated both with the change in the spatial location of the belt and with a change of the intensity of electrons with an energy exceeding the threshold of the detector; the time variations of the intensity of protons occur only in the outer part of the proton belt, beginning with $L > 4.5$

Card 1/2 UDC 538.691

L 33275-66

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ACC NR: AP6011709

and increase with an increase of L, whereas the position of the maximal intensity (L_m=3.5) and the proton intensity at the maximum change very little. The author thanks N. Gordeyev and N. Rachetkin for performing the calculations and formulating the material. Orig. art. has: 3 figures.

SUB CODE: 08 SUBM DATE: 10Jun65 / ORIG REF: 003 / OTH REF: 004

Card 2/2

L 05737-67 EWT(1)/FCC GW
ACC NR: AP7001643 SOURCE CODE: UR/0203/66/006/004/0658/0660

4/8

AUTHOR: Vernov, S. N.; Savenko, I. A.; Tel'tsov, M. V.; Shavrin, P. I.

ORG: Institute of Nuclear Physics, Moscow State University (Moskovskiy gosudarstvennyy universitet, Institut yadernoy fiziki)

TITLE: Intensity of protons and electrons in the outer radiation belt in the period 1961-1964

SOURCE: Geomagnetizm i aeronomiya, v. 6, no. 4, 1966, 658-660

TOPIC TAGS: radiation belt, proton, electron, solar activity

ABSTRACT: The authors present the results of equatorial measurements made in 1964
of the intensity of protons with energies $\geqslant$ 400 keV and electrons with energies
>2 MeV at the center of the outer radiation belt. These results are compared with
similar data obtained in 1961. The conclusion is drawn that there is a tendency to
a decrease of the mean absolute intensity of the hard electrons of the outer radiation
belt in 1964 in comparison with 1961-1962. If the noted variations in the absolute
intensities of hard electrons and low-energy protons are considered within the frame-
work of the theory of the formation of the radiation belts it can be postulated that
the mean density of protons with energies of tens of keV beyond the limit of stable
trapping varies little with a change of solar activity. At the same time, the
density of electrons with energies of hundreds of keV, forming during the drift of
hard electrons at the center of the outer radiation belt, rises sporadically only

UDC: 523.72

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L 08737-67

ACC NR: AP7001643

2

in periods of rather strong geomagnetic disturbances, leading to the formation of diffusion waves. The intensity of the hard electrons in the outer radiation belt therefore is subject to long-period variations associated with the cycles of solar activity. The authors thank B. A. Tverskoy for discussions of the work, and N. N. Rachetkina for taking part in the processing the experimental materials. Orig. art. has: 2 tables. [JPRS: 38,230]

SUB CODE: 03,20 / SUBM DATE: 04Feb66 / ORIG REF: 007 / OTH REF: 007

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L 42150-66

ACC NR: AP6028350

the region of smaller L occurred in the absence of geomagnetic disturbances. This was followed by a decrease in intensity and a shift in the intensity maximum to its initial position. During the magnetic storm on 1 September 1964, recorded by Kosmos 41, the intensity of electron flux with energies greater than 2 Mev at L = 5 was 3.5 x 10^2/cm^2sec. A peak of hard electrons with an intensity of 10^3/cm^2sec was recorded on September 3—4 at L = 6—7. This peak was shifted to smaller L shells until it reached a maximum intensity of 10^4/cm^2sec. Variations in the protonosphere were of smaller amplitude. The diffuse wave of relativistic electrons was thus first observed in the outer radiation belt at high geomagnetic latitudes. This wave was not accompanied by low-energy protons. Orig. art. has: 2 figures. [EG]

SUB CODE: 04/ SUBM DATE: 18Feb66/ ORIG REF: 006/ OTH REF: 003/ ATD PRESS: 5062

Card 2/2 MLP

ACC NR: AP7000521 SOURCE CODE: UR/0048/66/030/011/1768/1770

AUTHOR: Volodichev, N. N.; Nesterov, V. Ye.; Savenko, I. A.; Sharvina, K. N.

ORG: none

TITLE: Study of the proton component of the inner radiation belt in the Brazilian anomaly by artificial Earth satellites Proton-1 and Proton-2 /Paper presented at the All-Union Conference on Physics of Cosmic Rays held in Moscow from 15 to 20 November 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 11, 1966, 1768-1770

TOPIC TAGS: proton counter, magnetic anomaly, proton, radiation belt, meteorologic satellite, Cerenkov counter, scintillation counter

ABSTRACT: The distribution of geomagnetically trapped protons with $E_p > 100$ Mev above the Brazilian anomaly was studied by the Proton-1 and Proton-2 satellites which repeatedly passed over that region at an altitude of 500 km. Since electrons with energies greater than 20 Mev are practically nonexistant in the inner radiation belt above the Brazilian anomaly it could be assumed that only high-energy protons were registered by the SEZ-1 apparatus, which consisted of a Cherenkov counter placed between two scintillation counters which could detect protons with $E_p > 100$ Mev and electrons with $E_e > 20$ Mev. A similar

Card 1/3

ACC NR: AP7000521

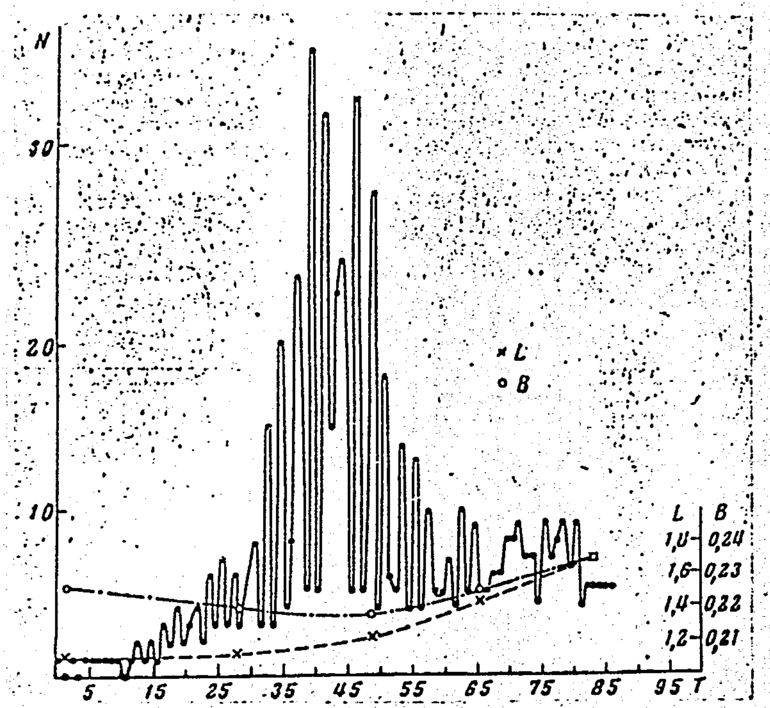

Fig. 1. Triple coincidence count rate (E_p > 400 Mev) as a function of time and coordinates L and B during one pass by the Proton-1 satellite

Card 2/3

L 02978-67 FSS-2/EWT(1)/FCC TT/GW

ACC NR: AP6032855 SOURCE CODE: UR/0020/66/1

B

AUTHOR: Grigorov, N. L.; Maduyev, V. L.; Mandel'shtam, S. L.; Pisarenko, N. F.; Savenko, I. A.; Tindo, I. P.

ORG: Institute of Physics im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Investigation of corpuscular radiation by the Luna-10 artificial satellite

SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 567-569

TOPIC TAGS: solar corpuscular radiation, lunar orbit, lunar satellite, GAS DISCHARGE COUNTER, SATELLITE DATA ANALYSIS

ABSTRACT: Gas-discharge counters (types SBT-9 and SF) were carried on the surface of Luna-10 (see Fig. 1). The SBT-9 had a window 0.2 cm² in area made of a 1.2 mg/cm² layer of mica covered by 0.3 mg/cm² gold sheet to decrease its registration effectiveness for solar x-rays with wavelengths shorter than 10 Å. This counter registered electrons and protons with energies greater than 40 kev and 0.5 Mev, respectively. The SF counter windows were aluminum sheets 2.7 mg/cm² thick and 0.5 cm² in area. These registered x-rays with wavelengths shorter than 14 Å, and electrons and protons with energies greater than 50 kev and 800 kev, respectively. The pulses from all counters were registered on logarithmic scales. The SF counter data were registered by independent logarithmic integrators. The telemetry system sampled the channels once every two minutes. The SBT-9 counter rate output increased in the

UDC: 537.491—>523.165

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L 029

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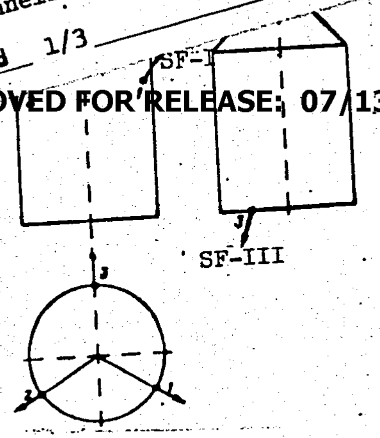

Fig. 1. Position of gas-discharge counters

first part of April, owing to x-ray radiation from the Sun. The SF counters were switched on on April 8. The satellite crossed the assumed boundary of the Earth's magnetospheric tail four times. During these periods all counters simultaneously indicated an increased activity. The maximum count in the period between 2 and 5 May was 50 pulses·cm^{-2}·sec^{-1}·sterad for the SBT-9 counter and 40 pulses·cm^{-2}·sec^{-1}.

Card 2/3

L 02978-67

ACC NR: AP6032855

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sterad for the SF counters. This activity is assumed to be due to unidirectionally moving electrons in the magnetosphere region whose energies exceed 40 kev. The data indicate that the Earth's magnetospheric tail is 60° wide and that the magnetic field does not form closed lines around the moon. Orig. art. has: 2 figures.

SUB CODE: 03,22/ SUBM DATE: 28Jun66/ ATD PRESS: 5099

ACC NR: AP7000519

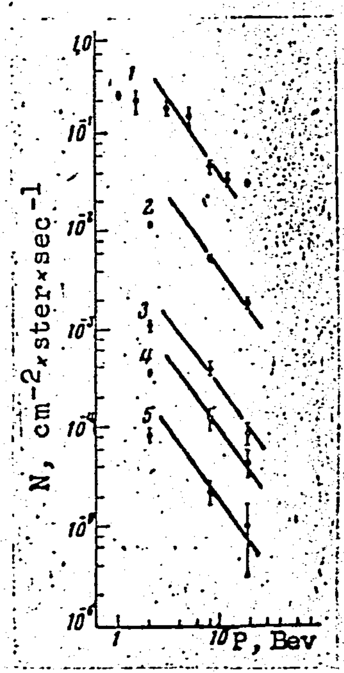

Fig. 1. Cosmic ray flux vs. hardness in the geomagnetic equator region

1 - Protons; 2 - α-particles; 3, 4, 5 - nuclei in the M, H, and VH groups.

Card 2/3

ACC NR: AP7000519

coated with black paint to prevent registration of upward moving particles. The scintillation counters consisted of FEU-13 photomultipliers and plastic scintillator plates 15 mm thick. Graphs of cosmic ray flux vs. hardness (see Fig. 1) were constructed from the preliminary data on the longitudinal effect and azimuthal asymmetry of cosmic ray intensity in the geomagnetic equator region for protons, α-particles, and nucleii in the M, H, and VH groups with energies of 1 Bev for protons and in the range of 2 to 19 Bev for the remaining groups. Orig. art. has: 2 figures. [WA-75]
[IV]

SUB CODE: 04, 18,20/ SUBM DATE: none/ ORIG REF: 002/
OTH REF: 001

Card 3/3

ACC NR: AP7000520 SOURCE CODE: UR/0048/66/030/011/1765/1767

AUTHOR: Grigorov, N. L.; Kalinkin, L. F.; Melioranskiy, A. S.; Estulin, I. V. Nesterov, V. Ye.; Pryakhin, Ye. A.; Savenko, I. A.

ORG: none

TITLE: A study of high-energy γ-quanta at the upper limits of the atmosphere [Paper presented at the All-Union Conference on Physics of Cosmic Rays held in Moscow from 15 to 20 November 1965]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 11, 1966, 1765-1767

TOPIC TAGS: gamma radiation, gamma counter, gamma detection, meteorologic satellite, cosmic ray telescope, scintillator, Cerenkov counter

ABSTRACT: The satellites Proton-1 and Proton-2 carried equipment designed to detect gamma rays with energies above 50 Mev and to measure their spectrum. The equipment (see Fig. 1) comprised a telescope formed by a γ-quanta converter consisting of a sandwiched plastic scintillator, and a Cherenkov counter with a radiator made from lead-containing glass which detected the energy and direction of gamma rays. The telescope detectors were placed inside a cover made of a scintillator plastic which protected the telescope from the noise of charged particles in selecting of anticoincidences. In addition to gamma radiation, the equipment was capable of registering pulses from other

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ACC NR: AP7000520

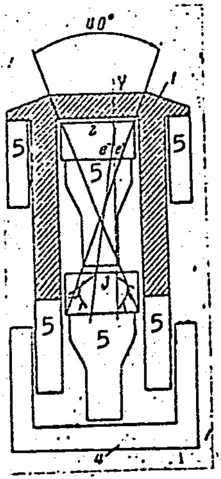

Fig. 1. Block diagram of the equipment

1 - Plastic scintillator; 2 - sandwich crystal; 3 - lead-containing glass; 4 - electronic circuits; 5 - photomultipliers.

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ACC NR: AP7000520

electrically neutral particles (neutrons for example), as well as the flow of charged particles with energies that exceeded the luminescence threshold of the Cherenkov counter radiator. The flow of γ-quanta with energies exceeding 5 Mev was approximately 2×10^{-3} $cm^{-2} \cdot sterad^{-1} \cdot sec^{-1}$; this value is in good agreement with the values obtained by other researchers. Orig. art. has: 3 figures. [WA-75] [IV]

SUB CODE: 04, 18, 20/ SUBM DATE: none/ ORIG REF: 004/
OTH REF: 006

Card 3/3

ACC NR: AP7000522 SOURCE CODE: UR/0048/66/030/011/1771/1772

AUTHOR: Basilova, R. N.; Volodichev, N. N.; Nesterov, V. Ye.; Savenko, I. A.

ORG: none

TITLE: Determination of the position of the cosmic ray equator based on results of measurements made with the Proton-1 satellite /Paper presented at All-Union Conference on Physics of Cosmic Rays held in Moscow from 15 to 20 November 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 11, 1966, 1771-1772

TOPIC TAGS: cosmic ray intensity, cosmic ray measurement, cosmic ray, meteorologic satellite, scintillation counter

ABSTRACT: Directional equipment for registration of cosmic particles was mounted on the Proton-1 satellite. The equipment consisted of two SEZ-1 scintillation counters capable of recording energy spectra of protons and cosmic ray nuclei with energies from 0.2 to 30 Bev. These counters, when used in a double coincident scheme are also capable of measuring protons and electrons with energies higher than 100 and 20 Mev at a solid angle of ~3 sterad. This double coincidence scheme, which can register particles incident from opposite directions, was chosen to record the positions of points of minimum cosmic ray intensity. The results (see Fig. 1) are compared with the results obtained with a

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ACC NR: AP7000522

single Geiger counter averaged for the Kosmos-4 and Kosmos-7 satellites. This comparison indicates qualitative agreement with the author's previous measurements. Orig. art. has: 1 figure. [WA-75]

[IV]

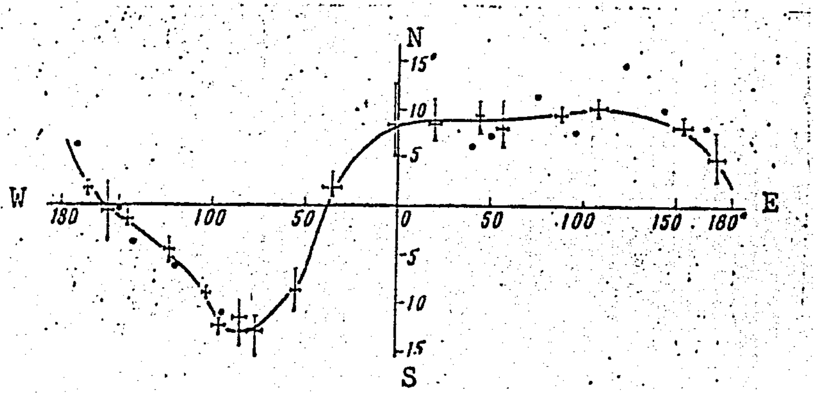

Fig. 1. Geographic location of minimum-intensity cosmic radiation points

Dots - double coincidence equipment; solid line - single Geiger counter.

SUB CODE: 04,18, 20/ SUBM DATE: none/ ORIG REF: 004

Card 2/2

ACC NR: AP7000523 SOURCE CODE: UR/0048/66/030/011/1773/1775

AUTHOR: Grigorov, N. L.; Klintsov, Yu. S.; Nesterov, V. Ye.; Rapoport, I. D.; Savenko, I. A.; Yakovlev B. M.

ORG: none

TITLE: Study of high-energy electrons using the Proton-1 and Proton-2 artificial Earth satellites /Paper presented at the All-Union Meeting on Physics of Cosmic Radiation held in Moscow from 15-20 November 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 11, 1966, 1773-1775

TOPIC TAGS: satellite data analysis, proton counter, electron distribution, electron flux, primary cosmic ray

ABSTRACT: The instrumentation of the Proton-1 and Proton-2 satellites included an SEZ-12 electron spectrometer which could register primary cosmic radiation consisting of electrons with $E_e \geq 0.3$ Bev. The following components were used for this purpose: 1) two scintillation counters with a differential amplitude analyzer which registered single particles with a charge $Z = 1$ moving at a relativistic velocity; 2) a gas Cherenkov counter (using Freon-13 at 11 atm) which registered particles whose energies exceeded $7 m_0c2$ (effective threshold for protons is 10 Bev) moving unidirectionally between two scintillation counters;

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ACC NR: AP7000523

3) a scintillation electron energy detector which is a simplified version of an ionization calorimeter. The scintillators were placed between four 1.5 cm-thick lead plates. The pulses from the energy detector were applied to an amplitude discriminator which had 6 threshold levels. Another scintillation counter enveloped by a 12 cm-thick lead shield determined the penetration capability of particles. 4) A scintillation avalanche detector served to isolate those avalanches which were generated by primary protons but whose effect was similar to avalanches generated by electrons. Thus, the cosmic ray electrons were measured accurately even if they numbered only 0.2—0.3% of the proton total. After processing the obtained electron count data, an unexpected result became apparent for electrons with $E_e \geq 0.3$ Bev. The intensity of electrons with $E_e \geq 0.3$ Bev and protons recorded by the SEZ-12 equipment is shown in Fig. 1 as a function of latitude. Even on the equator where particles with energies less than 7 Bev/sec should not be found because of the Earth's magnetic field, 0.3-Bev/sec electrons were recorded. These, consequently, cannot be primary electrons; they are electrons which have been trapped and retained by the Earth's magnetic field. The SEZ-1 apparatus in the Proton-1 registered particles with charge $Z = 1$ and $Z = 2$ in the equatorial regions where their intensity was 1.2 (for $Z = 1$) and 2.1 (for $Z = 2$) times more predominant in the West than in the East. If it is assumed that the primary protons possess the same asymmetry, the SEZ-1 equipment recorded a flux

SAVENKO, I.S., master

Machine for removing collector micanite. Energetik 12 no.6:18 Je '64. (MIRA 17:9)

*SAVENKO, I. V.

"Drainage of Peat Fields of the Inundation of Hydro Peat.," Torf. Prom., No. 5, 1948. Engr.

SAVENKO, I. V.

"Crossing Ditches in a Cut Field," Torf. Prom., No. 8, 1948. Engr.

SAVENKO, I. V.

Drainage

Some problems concerning the regulation of water reservoirs of the drainage system of peat enterprises. Torf.prom. 29 no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 195~~3~~2 Uncl.

ANTONOV, V.Ya., kand.tekhn.nauk; BEZZUBOV, N.D., kand.tekhn.nauk; BELOKOPYTOV, I.Ye., kand.sel'skokhoz.nauk; BLYUMENBERG, V.V., kand.tekhn.nauk; BOGDANOV, N.N., kand.tekhn.nauk; BRAGIN, N.A., inzh.; VASIL'YEV, Yu.K., inzh.; VINOGRADOV, V.A., inzh.; ROZENBERG, B.I., inzh.; GORGIDZHANYAN, S.A., kand.tekhn.nauk; ZIZA, A.A., kand.sel'skokhoz.nauk; KALABUKHOV, M.V., agronom-meliorator; KOLOTUSHKIN, V.I., inzh.; KORCHUNOV, S.S., kand.tekhn.nauk; KRYUKOV, M.N., dotsent; VAVULO, V.A., inzh.; NAUMOV, D.K., kand.tekhn.nauk; OLENIN, A.S., inzh.; PROVORKIN, A.S., inzh.; PROKHOROV, N.I., dotsent; RASKIN, G.I., inzh.; SAVENKO, I.V., inzh.; SERGEYEV, B.F., kand.tekhn.nauk; STOYLIK, M.A., inzh.; SUKHANOV, M.A., inzh.; TOPOL'NITSKIY, N.M., kand.tekhn.nauk; TYUREMNOV, S.N., doktor biol.nauk, prof.; FATCHIKHINA, O.Ye., kand.sel'skokhoz.nauk; TSVETKOV, B.I., inzh.; CHUBAROV, N.D., inzh.; MANDEL'BAUM, A.I., inzh.;

(Continued on next card)

ANTONOV, V.Ya.---(continued) Card 2.

YARTSEV, A.K.; SAMSONOV, N.N., inzh., glavnyy red.; BERSHADSKIY, L.S., inzh., nauchnyy red.; VARENTSOV, V.S., kand.tekhn.nauk, nauchnyy red.; VYSOTSKIY, K.P., kand.tekhn.nauk, nauchnyy red.; GORINSHTEYN, L.L., kand.tekhn.nauk, nauchnyy red.; GORYACHKIN, V.G., prof., nauchnyy red.; YEFIMOV, P.N., kand.tekhn.nauk, nauchnyy red.; KUZHMAN, G.I., kand.tekhn.nauk, nauchnyy red.; KULAKOV, N.N., kand.tekhn.nauk, nauchnyy red.; KUTAIS, L.I., prof., doktor tekhn.nauk, nauchnyy red.; MIRKIN, M.A., inzh., nauchnyy red.; SEMENSKIY, Ye.P., kand.tekhn.nauk; nauchnyy red.; SOKOLOV, A.A., kand.tekhn.nauk, nauchnyy red.; KHAZANOV, Ya.N., dotsent, nauchnyy red.; KHALUGO, A.K., inzh., nauchnyy red.; TSUPROV, S.A., dotsent, nauchnyy red.; SHTEYNBOK, G.D., inzh., nauchnyy red.; KOLOTUSHKIN, V.I., red.; SKVORTSOV, I.M., tekhn.red.

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1. Chlen-korrespondent AN BSSR (for Goryachkin).
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SAVENKO, I.V., inzhener.

Certain problems of water supply for fire control in peat fields.
Torf.prom. no.2:23-24 '54. (MLRA 7:3)

1. Glavtorf. (Fire extinction--Water supply) (Peat industry)

Savenko, I. V.

KULAKOV, I.V., inzhener; SAVENKO, I.V., inzhener

Maximum use of earth cutting excavators in peat winning and construction enterprises. Torf.prom.32 no.5:16-18 '55. (MLRA 8:10)

1. Orekhovo-Zuyevskiy torfotrest (for Kulakov). 2. Glavnoye upravleniye torfyanoy promyshlennosti (for Savenko)
(Peat machinery)

SAVENKO, I.V., inzhener

[redacted]

"Peat bog drainage." V.V.Shablinskii. Reviewed by I.V.Savenko.
Torf.prom.32 no.5:29-30 '55. (MLRA 8:10)
(Peat bogs) (Drainage) (Shablinskii,V.V.)

Savenko, I.V.

✓1069. DRYING OF MILLED PEAT FIELDS BY DEEP CHANNELS. Savenko, I.V. (Torf. Prom. (Peat Ind., Moscow) 32 1955, (6), 18-20). The advantage of using deep channels, tunnel drains or boreholes with pumps in order to provide room for a year's atmospheric deposits in a pervious stratum below the peat bed, is calculated. Trials in possible sites are urged. (L).

FU

Main Admin Peat Industry

SAVENKO, I.V., inzh.; KULAKOV, I.V., inzh.

Crossings over side drains in milled peat fields. Torf.prom. 34 no.6:21-22 '57. (MIRA 10:12)

(Peat industry)

SAVENKO, I.V., inzh.; KULAKOV, I.V., inzh.

Cleaning of block drainage ditches by means of KPSH screw rotor machines. Torf. prom. no.1:11-13 '58. (MIRA 12:12)
(Drainage) (Peat machinery)

AUTHOR: Savenko, I.V., Engineer SOV/118-58-2-16/19

TITLE: The Drainage of Fields from Which Cut-Peat Is Extracted (Osusheniye poley dobychi frezernogo torfa)

PERIODICAL: Mekhanizatsiya trudoyëmkikh i tyazhëlykh rabot, 1958, Nr 2, pp 42-43 (USSR)

ABSTRACT: Nine methods of draining fields of extraction of cut-peat were proposed and tried out by the Institut torfa AN BSSR (the Peat Institute of the AS of the Belorussian SSR), VNIITP, the Giprotorf and different trusts of the peat industry. These methods are described in detail. The author states that not one of these methods guarantees a reliable and durable drainage of upper peat layers. Further experiments are necessary. The name of the late Professor A.D. Brudastov is mentioned in connection with this problem. There is 1 table.

1. Mining engineering 2. Peat--Handling

Card 1/1

AUTHOR: Savenko, I.V., Engineer 99-58-7-8/10

TITLE: Rotating Auger for Cleaning Drainage Canals (Shneko-rotornaya mashina dlya ochistki osushitel nykh kanalov)

PERIODICAL: Gidrotekhnika i melioratsiya, 1958, 10 Nr 7, pp 47-49 (USSR)

ABSTRACT: In 1954, S.G. Timofeyev (Shuvalov Peat Enterprise in the Leningrad Oblast') designed a flexible rotating auger. After improving this design, 22 augers were built in 1956. About 2,000 km of canals in the Leningrad oblast' have been cleaned. At the same time, a branch of the Vsesoyuznyy nauchno-issledovatel'skiy institut (All-Union Scientific Research Institute) designed, tested and started the serial manufacture of a tractor-mounted flexible rotating auger (KPSh) (see photograph). The new machine cleans canals up to a depth of 1.8 m. Attached to a DT-54 or DT-55 tractor, the auger is operated from the tractor's power take-off.
There are two diagrams, one photograph and 1 table.

1. Canals - Maintenance 2. Augers - Flexible - Design
3. Augers - Flexible - Applications

Card 1/1

AUTHOR: Savenko, I. V. SOV/50-58-11-14/25

TITLE: Hydrometric Stations on Peat Massifs (O gidrometeorologicheskikh stantsiyakh na torfyanykh massivakh)

PERIODICAL: Meteorologiya i gidrologiya, 1958, Nr 11, pp 47-48 (USSR)

ABSTRACT: During the sixth five-year plan the production of peat is intended to be considerably increased and further peat massifs are to be discovered (Directives of the XXth Congress of the KPSS = Kommunisticheskaya partiya SSSR (Communist Party of the USSR)). Most of the peat massifs to be exploited form high moorland usually of a considerable water capacity and content. The peat is here only slightly decomposed. It is difficult to drain such peat massifs; their preparation for cut peat production wastes time and is expensive. The establishment of the necessary moor stations for meteorology and hydrology is progressing only slowly. Therefore, the peat producing industry has no reliable indices available for the characterization of the hydrologic phenomena. However, these data are required for a correct design and erection of the necessary structures and drainage. In 1954 the first station of this type was opened on the Lar'yanskiy peat massif (Leningrad area) by a working group

Card 1/3

Hydrometric Stations on Peat Massifs SOV/50-58-11-14/25

of collaborators in the peat industry of the Ministerstvo elektrostantsiy (Ministry of Power Stations) and the Glavnoye upravleniye gidrometeosluzhby (Main Administration of the Hydro-Meteorologic Service). This station's duties are as follows: 1) Supplying of reliable information for establishing and precisely defining calculation standards and methods for the runoff from the drained peat beds and those being exploited. 2) Determination of hydrologic and meteorologic conditions causing excessive humidity of high moorland. 3) Preparation of efficient draining methods of slightly decomposed peat beds with a high humidity content. Since the establishment of the Lar'yanskaya station, meteorologic and hydrologic elements were measured there, the ground water level was watched, and the water filtration through the peat bed investigated. The results obtained were: 1) Coefficients of runoff of various peat beds. 2) A higher content of dry substance in the peat during the "deformation maturity" than indicated in the charts. 3) Filtration taking place from the pool in the central part of the peat massif in the direction of the peat drying fields located to the East. 4) A considerable change in the chemical composition of the water in the pools leading to the conclusion that an intense exchange of water takes place.

Card 2/3

SAVENKO, I.V., inzh.; KULAKOV, I.V., inzh.

Use of floating units for cleaning of draining ditches at peat works. Torf.prom. 36 no.4:31-32 '59. (MIRA 12:9)

1. Mosoblsovnarkhoz (for Savenko). 2. Orekhovskiy torfotrest (for Kulakov).
(Peat bogs) (Drainage)

ZYUZIN, F.S., inzh.; SAVENKO, I.V., inzh.

Industrial production of peat fertilizers and manures at the peat works of the Moscow Province Economic Council. Torf. prom. 36 no.6:4-8 '59. (MIRA 13:2)

1. Orekhovskiy torfotrest (for Zyuzin). 2. Mosoblsovnarkhoz (for Savenko).

(Moscow Province--Peat)
(Moscow Province--Fertilizers and manures)

SAVENKO, L. A.

USSR/Cultivated Plants. Technical Plants. Oil and Sugar Bearing Plants. M

Abs Jour : Ref Zhur-Biol., No 15, 1958, 68296

Author : Taran, I. S., Savenko, L. A., Shchors, V. I.
Inst : Kirovograd State Agricultural Experiment Station.
Title : The Selection and Seed Cultivation of Oil Flax.

Orig Pub : V sb.: Kratkiye itogi raboty (Kirovogradsk. gos. s.-kh. opyt. st.) za 1931-1955 gg. No 1, Kiev, 1957, 119-129

Abstract : Here, hybridization methods with fertilization selectivity were used. The best strains selected throughout the nation, as well as by the All-Union Institute of Plant Cultivation were used in crossbreedings. Individual selection was based

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USSR/Cultivated Plants. Technical Plants. Oil and Sugar Bearing Plants. M

Abs Jour : Ref Zhur-Biol., No 15, 1958, 68296

on hybrid populations of the first and subsequent populations, on sowings of selected plants, and on prospective strains. The Kirovogradskiy 71 strain, whose yield usually exceeds the yield of standard strains, such as the Voronezhskiy 1308 strain, was obtained by uniting the best seeds of strains which were developed at the Voronezh and Don experiment stations, and then by crossbreeding within this artificial population. The strain has been distributed throughout the Cherkassk and Kirovograd Oblast's. Also, the drought-resistant Kirovogradskiy 4 strain, which appears to have good prospects, was developed. In seed cultivation, pri-

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